What is claimed is:

1. A method for forming a bottle-shaped trench comprising the steps of:

providing a substrate having a pad structure and at least one trench therein;

forming a mask layer to fill the bottom of the trench;

etching the portion of the semiconductor substrate of the trench which is not covered by the mask layer; and

removing the mask layer to form the bottle-shaped trench.

2. The method of claim 1, wherein the etching of the semiconductor substrate to form a bottle-shaped trench comprises the steps of:

filling de-ionized water in the trench; and

diffusing an etchant in the trench by means of the de-ionized water, thereby etching the semiconductor substrate not covered by the masking layer.

3. The method of claim 2, wherein the step of filling the de-ionized water in the trench comprises: immersing the semiconductor substrate in the de-ionized water.

4. The method of claim 2, wherein the step of diffusing an etchant in the trench comprises: immersing the semiconductor substrate in an etching solution containing the NH_4OH+H_2O etchant.

5. The method of claim 1, wherein the semiconductor substrate is etched using NH4OH+H2O to form the bottle-shaped trench.

6. The method of claim 1, wherein the pad structure comprises a stacked oxide layer and a nitride layer.

7. The method of claim 1, wherein the masking material is photoresist.

8. The method of claim 1, wherein the filling of the mask layer in the trench comprises the steps of:

coating the pad structure with a masking material to fill the trench; and

recessing the masking material to a predetermined depth, thus forming a mask layer in the trench.

9. The method of claim 8, wherein the masking material is removed with a solution comprising a mixture of H_2SO_4 and Hydrogen Peroxide.

10. The method of claim 1, wherein the trench has a sidewall with a collar oxide layer at the top of the trench, and the semiconductor substrate unmasked by the collar oxide layer is etched in the trench.

11. The method of claim 1, wherein the depth of the mask layer is defined to about 600nm from the top of the trench.